fewer severe head injuries. Unfortunately, there has been a gradual return to the use of the head as a weapon, which may result in an increase in severe neck injuries with paralysis, particularly in defensive backs. Coaches should abide by the rules and teach the avoidance of "stick blocking" and "spearing." All players should be encouraged to develop maximally strong neck musculature.

JAMES B. GOLDEN, MD

REFERENCES

Schneider RC: Head and Neck Injuries in Football Mechanisms—Treatment and Prevention. Batlimore, The Williams and Wilkins Company, 1973

Robertson WC Jr, Eichman PL, Clancy WG: Upper trunk brachial plexopathy in football players. JAMA 241:1480-1482, Apr 6, 1979

Torg JS, Truex R Jr, Quedenfeld TC, et al: The National Football Head and Neck Injury Registry—Report and conclusions 1978. JAMA 241:1477-1479, Apr 6, 1979

Hemifacial Spasm or Facial Tic

HEMIFACIAL SPASM, or facial tic, is not a common disorder. However, it can be devastating to a patient's life-style and until recently has been resistant to most forms of therapy. The unilateral facial twitching is obvious to any observer, although a medical history will almost invariably show that the painless abnormal movements began in the facial muscles around the eye, spread to involve perioral muscles and sometimes platysma, and never involve shoulder or arm musculature.

The causal theories presented for this entity have been numerous and include vague congenital or acquired organic brain lesions, tumors and psychological afflictions. In the absence of a tumor, a rare cause of this problem, treatment—whether medical, psychological or surgical—has been unrewarding.

Recently, the etiologic concept of compression of the facial nerve by branches of normal but tortuous cerebellar arteries has achieved considerable attention. The microscopic surgical manipulation of these vessels alone, without manipulation or damage to the facial nerve itself, has been effective in stopping the facial spasm in an overwhelming majority of patients. Although long-term follow-up has yet to occur, this operative decompression of the facial nerve appears to offer a solution to a difficult and disabling problem.

RANDALL W. SMITH, MD
JOHN ALKSNE, MD

REFERENCES

Gardner WJ, Sava GA: Hemifacial spasm: Irreversible pathophysiologic state. J Neurosurg 19:240-247, Mar 1962

Jannetta PJ, Abbasy M, Maroon JC, et al: Etiology and definitive microsurgical treatment of hemifacial spasm. J Neurosurg 47:321-328, Sep 1977

Trigeminal Neuralgia

TRIGEMINAL NEURALGIA (tic douloureux) is characterized by devastating piercing pain in the face, in the distribution of one or more of the major divisions of the trigeminal nerve. Both pharmacological and surgical treatments have been unsatisfactory in the past because of a significant failure rate and toxicity with the use of drugs, and because of a significant failure rate and undesirable loss of normal sensation with surgical therapy.

Recently, Jannetta proposed that trigeminal neuralgia results from cross-compression of the trigeminal sensory nerve root, near its entry into the pons, by adjacent arterial loops usually of the superior cerebellar artery. Microsurgical separation of the offending artery from the trigeminal nerve root and insertion of a cushion, such as a small muscle fragment, between the artery and nerve has led to a very high cure rate in trigeminal neuralgia. The surgical complication rate is low and, because the nerve root is not cut, normal sensory function is preserved. This surgical procedure now provides a very high success rate, low rate of complications and a way to preserve normal sensory function. Jannetta has also suggested that cross-compression of the appropriate nerve root by adjacent arterial loops may be the cause of other forms of cranial nerve dysfunction such as glossopharyngeal neuralgia, hemifacial spasm and Meniere disease.

RONALD F. YOUNG, MD

REFERENCES

Jannetta PJ: Microsurgical approach to the trigeminal nerve for tic Douloureux. Prog Neurol Surg 7:180-200, 1976

Young RF: Trigeminal and glossopharyngeal neuralgia, *In* Conn HF, Conn RB (Eds): Current Therapy. Philadelphia, WB Saunders, 1975, pp 712-715

Craniosynostosis and Craniofacial Reconstruction

IN THE 1960's Tessier and Guiot initiated collaboration between plastic surgery and neurosurgery by utilizing a combined extracranial-intracranial approach in the treatment of orbital hypertelorism. This collaboration has continued to expand its frontiers to other varieties of craniofacial anomalies, craniosynostosis and some tumors involving the base of the skull.

In children with coronal craniosynostosis, it is no longer the goal of surgical therapy merely to open the closed cranial suture line by craniectomy. Recognition that the skull base is also involved has prompted more definitive surgical approaches that include frontal bone advancement and orbital

osteotomy. Subsequently mid-face advancement may be required in patients with the Crouzon syndrome and in some patients with the Apert syndrome.

Premature closure of the sagittal suture, which is rarely associated with orbital and facial deformities, has been satisfactorily treated for many years with strip craniectomy. A new method for treating this abnormality has been described by Jane and offers immediate correction of the deformity by reducing the anteroposterior diameter and increasing the transverse diameter.

In North America there are several craniofacial centers where the craniofacial team consists of a plastic surgeon, a neurosurgeon, a pediatrician, an ophthalmologist, an orthodontist, and other specialists who continue to refine and improve the treatment for severe craniofacial anomalies. Cosmetic results have been particularly rewarding in patients who have orbital hypertelorism and the less complicated craniofacial clefts.

JUSTIN W. RENAUDIN, MD

REFERENCES

Mohr G, Hoffman HJ, Munro IR, et al: Surgical management of unilateral and bilateral coronal craniosynostosis: 21 years of experience. Neurosurgery 2:83-92, Mar-Apr 1978

Jane JA, Edgerton MT, Futrell JW, et al: Immediate correction of saggital synostosis. J Neurosurg 49:705-710, Nov 1978

Munro IR: Orbito-cranio-facial surgery: The team approach. Plast Reconstr Surg 55:170-176, Feb 1975

Neurosurgical Aspects of Congenital Lumbar Spondylolisthesis

IN A TYPICAL PATIENT suffering with backaches from congenital lumbar spondylolisthesis, no neurological deficits are found on clinical examination. However, in a few patients neurological signs are present due to disc changes occurring most often at the level above the site of the spondylolisthesis. Lumbar spondylolisthesis is most frequent at the lumbosacral level and, in these patients, disc protrusions occur most often at the next higher level, L4-5, rather than at the site of the spondylolisthesis. These patients show more significant neurological changes than the average L4-5 disc protrusion patient. Extensor weakness of the foot of some degree will occur in 70 percent of the patients (40 percent having a complete foot drop and 30 percent a partial foot drop).

The explanation for the high incidence of foot extensor weakness is due possibly to three factors: (1) The fifth lumbar nerve root sometimes becomes entrapped due to entanglement in fibrous tissue along the side of the vertebra. A ligamentous band runs from the undersurface of the transverse process to the site of the vertebral body and, with the forward slippage and downward descent of the 5th lumbar vertebra, the ligament comes down on the L-5 root and may entrap it against the sacrum. (2) The forward slippage and degenerative disc changes can cause the intervertebral disc to bulge out around the periphery of the vertebral body, just like squashed putty, burying the nerve root in this bulging mass after it has emerged from the foramen. (3) A third method of producing nerve root pressure occurs when the vertebral body glides forward and downward along the inclined plane of the superior surface of the vertebral body below. With this movement, the pedicles descend on the nerve root and cause kinking as it emerges through the foramen.

In patients with spondylolisthesis and neurological deficits myelographic examination is required and will usually show complete myelographic blocks or significant nerve root deformities. Orthopedic surgeons favor spinal fusion when nonsurgical methods are not successful. Surgical therapy is most commonly used in teenagers and young adults, and rarely in the older patients. The combination of spondylolisthesis and disc protrusions, however, involves an older patient population, which usually responds successfully to simple disc excision without concomitant fusion.

The occurrence of disc protrusion in a series of patients with spondylolisthesis has been reported as 12 per 100 cases of spondylolisthesis, 2 having disc problems at the spondylolisthesis site and 10 at other intervertebral level.

LYMAN MAASS, MD

REFERENCES

Symposium on spondylolisthesis. Clin Orthop 117:1-176, 1976

Macnab I: Management of spondylolisthesis, *In* Krayenbuhl H, Maspes PE, Sweet WH (Eds): Progress in Neurological Surgery—Vol 4. Basel, Karger, 1971, pp 246-276

Acoustic Tumors

IN THE PAST TWO DECADES tremendous advances have made it possible for all physicians to recognize acoustic (schwannomas) tumors of the cerebellopontine angle without the symptoms and findings provided in classic models of this disorder.

Physicians should not wait for any or all of the symptoms of headache, nausea, vomiting or staggering gait and such findings as papilledema, facial numbness, facial palsy or ataxia to appear before being alerted to the possibility of this usually be-